

Eliot (Gus.)

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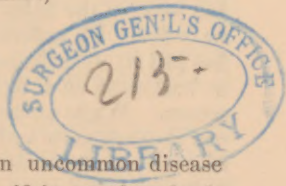


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## POLIOMYELITIS ANTERIOR IN ADULTS.

By GUSTAVUS ELIOT, A.M., M.D.,  
Of New Haven, Connecticut.



To make the diagnosis of a rare disease, or of an uncommon disease occurring under unusual circumstances, is always gratifying to the physician. But of incomparably greater importance to both patient and practitioner is the selection of a plan of treatment which will remove the annoying symptoms. It is especially in diseases which, while they sometimes recover spontaneously, on the other hand more often are followed by protracted convalescence or incomplete recovery, that self-interest and humanity alike demand extreme care in the application of remedial agents. In the successful treatment of these cases one realizes the inestimable value of scientific therapeutics.

Less than eight years ago Dr. E. C. Seguin, of New York, published a small volume on *Myelitis of the Anterior Horns*. This included an analysis of forty-five cases of the disease, of which nine had fallen under the personal observation of the author, one had been communicated by Dr. G. M. Beard, three had been reported by Dr. W. A. Hammond in his *Treatise on the Diseases of the Nervous System*, one by Dr. D. F. Lincoln in the *Boston Medical and Surgical Journal*, and the remainder by various foreign authors. During subsequent years a number of cases have been reported in this country. Among those which have come to my notice are five by Dr. Wharton Sinkler, of Philadelphia, and two by Dr. Julius Althaus, of London, in the *AMERICAN JOURNAL OF THE MEDICAL SCIENCES* for 1878; and one each by Dr. J. Van Duyn, of Rochester, and Dr. A. Ranney, of New York, in the *Archives of Medicine* for 1884. Translations of works by Erb, Charcot, and Rosenthal also contain histories of cases.

The neurologists have at length established the possibility of the occurrence in adults of a form of paralysis closely resembling the well-known infantile spinal paralysis. Kussmaul, of Freiburg, and his pupil Frey, called it poliomyelitis anterior. It is now easy for a physician familiar



with the literature of diseases of the spinal cord to make the diagnosis, if a case of this particular disease happens to consult him. Having myself had the good fortune to meet with such a case, I will introduce the history here.

*Case of Subacute Poliomyelitis Anterior in an Adult.*—Feb. 19, 1884. Mr. D. was born in Ireland, is twenty years of age, and has lived in New Haven two and a half years. There is no history of insanity in the family. His mother and sister are both living. His father died of consumption November 14, 1883. The patient was married July 3, 1883, and has no children. For several weeks his home has been in a basement. He denies having had venereal disease, as well as addiction to venereal excesses. He has been in the habit of using a little alcohol, tobacco, and weak tea, and no coffee. He suffered from chills and fever three or four years ago, but has had no other illness. Since September 20, 1883, he has been employed as brakeman on a freight train, which every night runs sixty miles and return. While at the farther end of the trip he has often been obliged to run through snow and water so that his clothing became thoroughly soaked as high as the waist. For several weeks previous to the death of his father he lost a great deal of sleep taking care of him, and suffered a great deal of anxiety. Subsequently he had a severe cold. A year ago he weighed 185 pounds, but during the winter he lost flesh, so that before the present illness came on his weight was only 155 pounds.

For three weeks he has noticed a weakness in both legs, so that he tires easily when walking, and cannot go up stairs, climb a ladder, or step up on a car or into a carriage as easily as formerly. This symptom was preceded by what he describes as "a tightening of the sinews" in the calves of both legs. This was not a cramp, and did not draw his leg up, but "the sinews felt as if they were drawn up," and he "could not straighten the legs without feeling it." He did not experience this sensation when quiet, but only when he walked. In two days he could not run. In two or three weeks the trouble came in his arms, but they were affected somewhat differently. There was weakness, but no "tightening of the sinews." The legs, thighs, forearms, and arms all grew smaller. For two or three days there was a little formication in the legs and arms, but no pricking sensations. Two and a half weeks after the weakness was first noticed numbness came on. Now there is pain in the calves of the legs, and numbness in the legs from the knees down but not above, most marked behind, and in the hands below the wrists. Both sides are affected alike, and the arms were involved three weeks later than the legs. There has been no anæsthesia, no sensation of a band around the body, and no coldness or blueness of the extremities. He has had no chills. Two weeks after the weakness commenced he was "a little feverish" for a single day. There has been no unusual sweating. At first the skin was "dry and parched" for a few days. The numbness came on a week later. Three or four weeks before the loss of strength was first noticed there was diminution of vision so that he could not easily read a newspaper. This soon passed away. He is sleepy all the time, and sleeps a great deal. The bowels move every day, but not freely. Electricity has been applied twice by a quack. R.—Ex. cascariæ sagradæ, ℥ij; tr. calumbæ, q. s. ad ʒiij.—M. Sig. ʒj before eating.

26th. The patient took the medicine three times a day and finished it day before yesterday at noon. It caused improvement of appetite, and

two or three loose painless movements of the bowels each day. It is now nearly a month since he noticed the first symptoms, and they are steadily increasing. The legs are growing weaker. The hands are not much weaker. There are no pains or cramps, only weakness. Some tremor is observable in the legs, arms, and tongue. Patellar reflex is absent. There is no anæsthesia. Once in three or four days he feels "a weakness across the kidneys." There is no œdema, and he has noticed no change in the urine. He sleeps well, and has had no headache lately. The tongue is broad and has a thin gray coating. Pulse 60. R.—Pil. cinchonidinæ sulph., āā gr. ij, No. xxiv. Sig. one t. i. d., before eating. R.—Sodii bromidi, ʒss; sodii bicarbonatis, ʒj; tr. belladonnæ, ʒij; aquæ, q. s. ad ʒiij.—M. Sig. ʒj A. M. and P. M., ʒij at evening, in water.

*March 5.* While taking the last medicine his mouth became dry, and the weakness increased more rapidly than before. He is now so weak that he can only walk a very short distance. Advised the application of strong mustard pastes over the back between the shoulders and in the lumbar region.

*7th.* After he stopped taking the belladonna and bromide, he ceased to grow worse. The involuntary muscular movements are gradually diminishing. On account of the weakness he has been obliged to keep quiet and not walk about much. Mustard was applied to rubefaction over spaces six inches square between the shoulders and "over the kidneys." R.—Liquor. ergotæ purificati, ʒvj; potassii iodidi, ʒiij; syr. sarsaparillæ comp., q. s. ad ʒiv.—M. Sig. ʒj t. i. d., in water. Recommend also bathing the limbs in hot water with salt and mustard, and rubbing them with whiskey.

*14th.* The patient finished the medicine day before yesterday. For three nights he bathed his limbs with whiskey. Then, commencing March 11, he used "gargling oil" four mornings and two nights. The last two nights he has used the mustard and salt in hot water as directed. The weakness commenced to go away March 10. The legs and arms are stronger. There is still numbness in both hands and feet. It is nearly all gone from the back of the legs. The bowels have moved every day but one; the appetite is good, and he sleeps well. Continue the treatment without change.

*21st.* The last of the medicine was taken yesterday morning. The patient has bathed his forearms and his legs to above the knees with whiskey twice a day, and has used no other medicine. He feels a great deal better, and is stronger in his legs and arms; the legs in particular are a great deal stronger, so that now he can go up and down stairs. The numbness is entirely gone from his legs, but not completely from his arms. His shoulders feel stiff. There is no headache, and no pain or weakness in the back. The stomach and bowels continue in good condition, and he sleeps well. Continue the same treatment as before.

*28th.* The patient took the last of the medicine day before yesterday in the morning. It did not perceptibly affect his head, stomach, or bowels. He has also rubbed his legs with whiskey. He continues to gain strength in his legs and arms. The numbness is all gone, except a little in the hands when he leans upon his arms. He went to work March 25, starting out on a freight train at 8.25 P. M., running sixty miles and return, arriving in the city at 6.35 A. M. He has only been out this one night, and was then assisted by his fellow-workmen. Afterwards he felt sore in his muscles, but otherwise no worse. R.—Liq. ergotæ pur., fʒss;



potassii iodidi, ℥ij; aquæ, ℥ij; syr. sarsaparillæ comp., q. s. ad ℥iv.—M. Sig. ℥j t. i. d., before eating.

*April 8.* Finished the medicine day before yesterday. Continues to rub his legs once a day with whiskey. His weight, which when he was worst was reduced to 142 pounds, has increased to 161 pounds. There is still some weakness in the legs and arms, but no numbness. Since the last visit he has run on the train three times, and has done all his work. He can jump up on a car, or run up and down stairs, but is not as strong as formerly. He feels good in every way. R.—Liq. ergotæ pur., ℥iij; potassii iodidi, ℥iss; aquæ, ℥ij; syr. sarsaparillæ comp., q. s. ad ℥iv.—M. Sig. ℥j t. i. d., in water.

*22d.* He has taken no medicine for a week, and is improving steadily. He has been running on the cars every night but one since his last visit. His natural strength is not fully restored, but is returning gradually. Last autumn he could lift 800 pounds, now he cannot lift 400. He can "jump around" almost as fast as ever, and do his ordinary work as well as ever. The arms and legs are a little slimmer than they used to be. There is no disturbance of sensation. The patellar reflex is still absent. Dismissed cured.

*Aug. 17.* With my friend, Dr. Frank H. Whittemore, I had an opportunity of examining my former patient. He is still employed as a brakeman on a night freight train, and has no difficulty in doing his regular work. His weight is 142 pounds; he thinks his limbs are as large in proportion to his weight as they ever were, but they are not as large as they were two years ago. There has been no change in his sexual feeling or power. The muscles of the thenar eminences are atrophied. His grip is very feeble for a man of his apparent strength. All the muscles of both upper and lower extremities respond to the faradic current. There are no disturbances of sensation. The patellar reflex is absent. He considers himself well, and dates the commencement of returning strength from the time when he began to rub his limbs with whiskey.

The progressive development of muscular weakness, unattended by febrile symptoms, but accompanied by diminution of the size of the limbs, by abolition of the patellar tendon reflex, and by sensations of numbness, yet without loss of tactile sensation, and without interference with the function of either rectum or bladder, renders the diagnosis clear and indisputable.

The history of the case seems to demonstrate the futility of indifferent treatment, the injurious effect of unwise and inappropriate treatment, and the beneficial results of a carefully selected and judicious plan of treatment. The patient continued to grow worse while he was taking a laxative with a bitter tonic, and the symptoms increased even more rapidly under the use of the bromide of sodium and tincture of belladonna. But when these remedies were discontinued, when rest was enforced by muscular weakness, counter-irritation was applied over the spine, stimulating frictions were employed upon the limbs, and ergot and iodide of potassium were administered internally, improvement was observed at once, and continued until the patient was able to resume his work. It is also interesting to

note that the diagnosis was made, and the treatment successfully carried out without the aid of electricity.

When we recall how carefully the symptomatology and pathology of this disease have been studied, it is surprising that so little has been established as to the comparative value of the various remedies which have been employed in the treatment of the disease. One might easily be led, by some of the recent reports of cases, to suppose that treatment was a matter of secondary importance, and that, on the other hand, the minute observation of symptoms and electrical reactions was alone worthy of attention and record. A large proportion of the reports of cases which have been published contain little or no information concerning the details of treatment, and in many others the multiplicity of drugs prescribed renders any reliable conclusions in regard to the effect of each almost impossible. Even Seguin, in his elaborate work, while discussing the treatment, abandons the analytical method, which led to positive conclusions in regard to symptomatology and prognosis; consequently the chapter on the former subject is less striking than the others, because its logic is less apparent.

A great variety of drugs has been used and recommended. Bromide of potassium, belladonna, strychnia, ergot, and iodide of potassium have been most often employed, and most praised. Counter-irritation, baths, rubbing and exercise, and electricity are also included as important elements in most plans of treatment.

The bromide of potassium, administered with ergot, is recommended by Dr. Sinkler. Of sixty cases (including the forty-five collected by Seguin), whose histories have come to my notice, the bromides were used in three. Dr. Sinkler gave, for eight days, to a case of one week's duration, ten grain doses of bromide of potassium, with half drachm doses of wine of ergot. At first the paralysis increased, but after three or four days there was improvement in all the muscles, and complete recovery finally resulted under the use of strychnia and faradism. A patient of Dr. Hammond, who for several months had had gradually increasing paralysis, took bromide of potassium in fifteen grain doses with the iodide of potassium and ergot. Here also at first the paralysis increased, but subsequently improvement commenced, and, electricity being also employed, continued for two or three months, when a relapse occurred. On this occasion iodide of potassium, ergot, hypodermic injections of strychnia, and faradism were used with considerable benefit. In my own case, as already mentioned, the bromide of sodium was given with tincture of belladonna, for a week, at the beginning of the second month of the disease, and during that period the symptoms rapidly increased. The evidence in regard to the value of the bromides in this disease is, therefore, entirely inconclusive; for, although it might be urged that, in the first two cases, bromide and ergot



produced a beneficial effect, it will be shown later on that equally, and perhaps more favorable results follow the use of ergot without the bromide. On the other hand, it would be hardly fair to attribute the apparently unfavorable result in the latter case to the bromide, for it may have been due, in part at least, to the belladonna, to whose action the patient seemed peculiarly susceptible, and which was given in such doses as to produce physiological effects.

Belladonna, however, has received the indorsement of Dr. Seguin as a remedy useful in this disease. Two cases, beside my own, have been reported in which it was used. Soulier, quoted by Seguin, gave the extract of belladonna, with iodide of potassium, to a man of fifty-seven years, who had been ill about two weeks. At the same time the actual cautery was repeatedly applied to the spinal region. Recovery followed. In a case which Dr. Seguin saw with Dr. T. A. McBride, a man of twenty-eight years was severely dry-cupped and took large doses of belladonna and ergot. Improvement soon commenced, and complete recovery followed. Here again the facts are insufficient to warrant any positive conclusion. In both cases the details of treatment are incompletely stated, and moreover, other remedies, viz., counter-irritation and ergot, were used, whose value is much less questionable. In my own case, in which belladonna was used with bromide of sodium, and pushed to the production of physiological effects with an unfavorable result, it is possible that the bromide alone might have proved innocuous. Under the existing uncertainty in regard to their therapeutic value, it would certainly be wise to be extremely cautious in the use of either drug.

Concerning the iodide of potassium, the evidence is more extensive. This drug has formed a part of the treatment in eleven cases. These may be divided for convenience of analysis into two groups, according as the remedy was employed in the early weeks of the disease, or after several months. In the case of Dr. Geddings, reported by Seguin, it is stated that the iodide disagreed after a few doses. In a case which came under the observation of Erb, two months after the first symptoms appeared, iodide of potassium was administered internally, and dry cups and cold compresses were applied externally. The patient soon commenced to improve, and ultimately nearly recovered. In one of Charcot's cases, quoted by Seguin, great improvement resulted in three months under the use of iodide of potassium internally and moxas to the spine. Soulier's case has already been mentioned, in which the use of iodide of potash with belladonna and the actual cautery, commenced at the end of three weeks, resulted in complete recovery at the end of three months. Dr. Hammond reports the case of a man of thirty-five years, who, on the fourth day of the disease, commenced to take iodide of potassium and ergot. The paralysis increased up to the seventh day, but improvement commenced on the ninth day. Afterwards electricity was employed, and at the end of a year



no weakness remained. In one of the cases reported by Dr. Sinkler, the patient, a man twenty-three years old, on the fourth day was directed to take iodide of potassium and quinia. The paralysis steadily increased for five days, when the treatment was changed. In my own case the iodide was used in connection with ergot, counter-irritation, and rubbing of the limbs, commencing at about the sixth week, and with an immediately favorable result. In recent cases, therefore, it appears that iodide of potassium has proved of little value, except when employed with ergot or counter-irritation, or both.

Of the cases of longer standing, one reported by Hammond has already been referred to, in which after several months iodide of potassium was used with ergot and other drugs and electricity, with favorable results, both in the original attack and in a relapse. In the fatal case of a syphilitic woman twenty-six years old, reported by Déjérine and quoted by Seguin, the use of iodide of potassium was commenced at the end of three months and continued for five weeks, during which time there was slight improvement. Six weeks later the paralysis extended to the upper extremities, and after seven weeks the patient died. In a patient whom Dr. Sinkler saw after six months the iodide was used in connection with massage, faradism, strychnia, and codeia, and the patient improved. In another case, which the same gentleman treated after one and a half years, the drug was employed at the same time with massage and faradism. This patient also improved. In cases of long standing, therefore, iodide of potassium does not seem to have proved efficacious except when electricity has been used simultaneously; nor, on the other hand, does it seem to have prevented the improvement, or even complete recovery, which ordinarily attends the use of electricity.

Strychnia has been given in some cases. In one reported by Seguin a second attack occurred in a man aged twenty-one, who was taking strychnia for the relief of the weakness which remained from a former attack. Another patient, whom Hammond and Seguin both saw, "took strychnia for a time without any effect, good or bad." In several other cases, in which it was used, recovery was slow. While, therefore, it may not always do harm it may be said that its utility in this affection is not well established. On the contrary, there is reason to believe that sometimes it may do positive injury. Consequently it should be avoided.

Ergot has been considerably used and highly commended. In the case, already mentioned, in which Dr. Sinkler employed it in connection with bromide of potassium and the external application of a stimulating liniment, some muscles improved and others did not. When, however, electricity was added to the treatment all improved. The improvement was not interrupted by the substitution of strychnia for the other drugs, electricity being continued, nor later by the exchange of strychnia for ergot. Finally complete recovery resulted. Dr. Geddings took ergot for a time

with no appreciable effect, but subsequently when counter-irritation and galvanism were used at the same time, complete recovery followed. Dr. McBride's patient was severely dry-cupped, and took large doses of ergot and belladonna. In a few months all paralytic symptoms passed away. Dr. Hammond used the drug in three cases. \* One patient, a woman of twenty-seven years, having already improved somewhat, after two months was treated with ergot and electricity, and completely recovered. The two other cases were mentioned in speaking of iodide of potassium. In one of these ergot was given with the iodide, and after there was some return of motility electricity was used until complete recovery resulted. In the other, ergot was given with the iodide and bromide of potassium, and after improvement commenced electricity was employed in addition. After several weeks a relapse occurred which was treated with ergot and the iodide of potassium, with hypodermic injections of strychnia and electricity. The patient improved greatly, although some atrophy of the muscles persisted. In my own case, under the use of ergot and iodide of potassium, with counter-irritation and rubbing of the limbs, the patient improved rapidly. There is, therefore, considerable reason for believing that ergot is useful in this disease. It seems to have done no harm, but, on the contrary, to have been beneficial in all the cases in which it was used. There was, moreover, no other element of treatment common to the cases enumerated, while, on the other hand, in some of them it was used with drugs, whose value is, to say the least, questionable.

Naturally, since most of the cases reported were treated by specialists in nervous diseases, electricity has been employed more frequently than anything else. It has been used early and late, and in the forms of both galvanism and faradism, generally with favorable effects. The only apparent exception is the case of Dr. Lincoln, in which the faradic current was applied from the fifth to the twenty-first day, during which time the paralysis increased. The galvanic current was then tried and continued until recovery, which commenced about the twenty-fifth day. This patient also took strychnia. More frequently electricity has been first used after the paralysis has ceased to increase, and then it has always seemed to promote recovery. Often in old cases great benefit has resulted from the use of the faradic current, when it is capable of inducing contractions in the affected muscles. Otherwise galvanism is more efficacious.

Counter-irritation has been employed in many cases which have resulted favorably and in some immediate improvement has followed.

Massage of the affected muscles, and rubbing of the extremities involved, have also been employed, with apparent advantage, in many of the cases which recovered.

Finally, it must be mentioned that, while a few cases have not proved amenable to treatment, some, on the contrary, have entirely recovered, or markedly improved, without any treatment.



The following conclusions are drawn from a study of the results of various plans of treatment as reported by different observers.

*First.* Counter-irritation and ergot should be employed early in every case.

*Second.* Massage and electricity should be used as soon as there is any evidence of improvement.

*Third.* Little, if any, effect can be expected from iodide of potassium.

*Fourth.* Belladonna and the bromides should be used only with extreme caution.

*Fifth.* Strychnia should be entirely avoided.

The value of these conclusions is greatly impaired because they are based on a small number of cases, and because the effect of any particular remedy is obscured by the possible effects of others which were used at the same time. Consequently it is exceedingly desirable that new cases should be reported as they occur, and that in all reports the details of treatment, whether successful or unsuccessful, should be stated more definitely than has hitherto been customary.

SEPTEMBER 25, 1884.















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